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1	116	("adhesive sheet").ti. and WO	EPO; JPO; DERWENT; IBM_TDB	2002/05/14 10:42
6	0	9935201.URPN.	USPAT	2002/05/14 10:16
7	0	9935201.URPN.	USPAT	2002/05/14 10:16
8	2	5462765.pn.	EPO; JPO; DERWENT; IBM_TDB	2002/05/14 10:42
13	2	5650215.pn.	EPO; JPO; DERWENT; IBM_TDB	2002/05/14 10:43
18	2	5897930.pn.	EPO; JPO; DERWENT; IBM_TDB	2002/05/14 10:43
-	0	"AU 6412499"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:19
-	3	5462765.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:28
-	0	"WO 0069985"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:28
-	41	"0069985"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:31
-	4	"WO 9400525"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:33
-	2	"WO 9935201"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:34
-	2	"jp 09141812"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:35
-	0	"EP 0279579"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:45
-	0	09311101.rlan.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:45
-	2	311101.rlan.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:57

-	0	"jp 2503717"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:57
-	2428	oike	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:58
-	392	oike and adhesive	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 10:58
-	7	oike and adhesive and "release liner"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 15:15
-	3	5585178.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 15:16
-	2	5731073.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 15:17
-	2	6083616.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 15:18
-	383	"release liner" and (embossed or structured or patterned) and angle	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 15:20
-	28	"release liner" and (embossed or structured or patterned) and angle and pitch	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/05/13 15:20
-	28	"release liner" and (embossed or structured or patterned) and angle and pitch	USPAT; US-PGPUB	2002/05/13 15:21
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-	1	428/40.1.ccls. and "release liner" and angle and pitch	USPAT; US-PGPUB	2002/05/13 15:26
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-	201	428/40.1.ccls. and "release liner"	USPAT; US-PGPUB	2002/05/13 15:41
-	34	428/156.ccls. and "release liner"	USPAT; US-PGPUB	2002/05/13 15:48
-	2	427/198.ccls. and "release liner"	USPAT; US-PGPUB	2002/05/13 15:50
-	54	428/194.ccls. and "release liner"	USPAT; US-PGPUB	2002/05/13 17:53
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-	0	("adhesive sheet" with method with "producing the same").ti.	USPAT; US-PGPUB	2002/05/13 17:54
-	0	("adhesive sheet" and method and "producing the same").ti.	USPAT; US-PGPUB	2002/05/13 17:54
-	40	("adhesive sheet" and method).ti.	USPAT; US-PGPUB	2002/05/13 17:55
-	403	("adhesive sheet" and method).ti.	EPO; JPO; DERWENT; IBM_TDB	2002/05/13 17:55
-	0	("adhesive sheet and method for producing the same").ti.	EPO; JPO; DERWENT; IBM_TDB	2002/05/13 17:55
-	0	("adhesive sheet and method").ti.	EPO; JPO; DERWENT; IBM_TDB	2002/05/13 17:56
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(54) [Title of the Utility Model] Pressure Sensitive Adhesion Processed Sheet

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(65) Kokai No. : Hei 6[1994]-20043

(72) Inventor

Hajime TANAKA  
c/o Nichiei Kako Kabushiki Kaisha [Japanese Company or Corporation]  
1-33, 6-chome, Higashimachi, Wakae, Higashi Osaka-shi

(72) Inventor

Tetsuo Oike  
same as the above

(73) Applicant 000226091

Nichiei Kako Kabushiki Kaisha  
1-33, 6-chome, Hibashimachi, Wakae, Higashi Osaka-shi

(74) Agent

Tatetsugu NAKATANI, patent agent

Examiner: Satoshi MORIKAWA

[note: All names, addresses, company names, and brand names are translated in the most common manner. Japanese language does not have singular or plural words unless otherwise specified with numeral prefix r general form of plurality suffix. Translator's note]

(57) [CLAIMS OF THE UTILITY MODEL]

[CLAIM ITEM 1]

A pressure sensitive adhesion processed sheet has characteristics as such it is constituted of a surface sheet body (1), a pressure-sensitive adhesive layer (3) having multiple number of independent small convex ( ) parts (2)... which are arranged in a scattered dot manner, and a release paper (5) having multiple numbers of independent small concave ( ) parts (4) .... which are arranged in a scattered dot manner in such manner to correspond to said multiple numbers of small convex ( ) parts (2) ....; and in addition, above-explained small convex ( ) parts (2)... are designed to protrude from a basic flat plane (3a) of above-explained pressure-sensitive adhesive layer (3), and height dimension (H) of said small convex ( ) parts (2) .... is set to be within a range of  $3\mu\text{m} \sim 50\mu\text{m}$ .

[DETAILED EXPLANATION OF THE UTILITY MODEL]

[0001]

[FIELDS OF INDUSTRIAL APPLICATION]

This utility model relates to a pressure sensitive adhesion processed sheet.

[0002]

[PRIOR ART]

According to conventional pressure sensitive adhesion processed sheets, they are constituted of a pressure-sensitive adhesive sheet that is formed by coating a pressure-sensitive adhesive agent flatly on a surface sheet body, and a release paper that is arranged by pasting on said flat pressure-sensitive adhesive coated plane. In addition, release treated plane of said release paper is formed in a flat plane form. Furthermore, this has been often used by peeling said release paper and manually pasting this pressure-sensitive adhesive sheet body onto a surface of to-be pasted goods.

[0003]

[SUBJECTS SOLVED BY THIS UTILITY MODEL]

However, according to above-explained conventional pressure sensitive adhesion processed sheets, it is often the case that an air is pasted in between a pressure-sensitive adhesive sheet body and a surface of goods that is pasted on to causing such problem as that a portion where said air becomes involved shows a "raised form" resulting in expanded part on the surface side of pressure-sensitive adhesive sheet body that is pasted. In addition, when area of pressure-sensitive adhesive sheet body happens to be large (for instance, at least 10 square cm) in particular, said problem has been noted to become prominent.

[0004]

In addition, when above-explained pressure-sensitive adhesive sheet body is pasted onto a certain type of plastic (polycarbonate, acryl), some type of gas generates from the plastic causing "raised form" as well.

[0005]

Furthermore, when pasting position of above-explained pressure-sensitive adhesive sheet is in error at some rate, it is necessary to repast this; however, because once pasted pressure-sensitive adhesive sheet body has a strong pressure-sensitive adhesive force, when it is peeled, it may cause tear of pressure-sensitive adhesive sheet body, or may cause wrinkles to present difficulty on repasting work.

[0006]

And therefore, this utility model's purpose is to offer a pressure sensitive adhesion processed sheet that solves above-explained problems to allow an easy repasting without causing so-called "raised form".

[0007]

[MEASURES USED TO SOLVE THE SUBJECTS]

In order to attain above-explained purpose, the pressure sensitive adhesive processed sheet relating to this utility model is constituted of a surface sheet body, a pressure-sensitive adhesive layer having multiple numbers of independent small convex ( ) parts which are arranged in a scattered dot manner, and a release paper having multiple numbers of independent small concave ( ) parts which are arranged in a scattered dot manner to correspond with said multiple numbers of convex ( ) parts; and in addition, above-explained small convex ( ) parts are designed to protrude from a basic flat plane of above-explained pressure-sensitive adhesive layer, and height dimension of said small convex ( ) parts is set within a range of 3  $\mu\text{m}$  ~ 50  $\mu\text{m}$ .

[0008]

[ACTIONS]

When a release paper is peeled from this utility model's pressure sensitive adhesion processed sheet to paste its pressure-sensitive adhesive plane onto other goods, each top end part of multiple numbers of small convex ( ) parts of the pressure-sensitive adhesive layer would closely adhere to a surface of other good; and at the same time, basic flat plane of pressure-sensitive adhesive layer is maintained in such manner so it would be isolated from the surface of other goods. And therefore, gaps with a large cross section that allows gas to pass through are formed between basic flat plane of said pressure-sensitive adhesive plane and a surface of other goods. In addition, it is possible for the air to easily escape to outside from said gaps to enable to paste without causing so-called "raised form".

[0009]

In addition, when it is lightly pasted, because only to top end parts of small convex ( ) parts of the pressure-sensitive adhesive layer are closely adhered to the other goods, area of close adhesion remains small. And therefore, even when pasting location happens to be in error, it is possible to easily peel this again for repasting work.

[0010]

In addition, when this pressure sensitive adhesion processed sheet is firmly pressed against other goods, it would not cause accidental detachment.

[0011]

[EXAMPLES]

This utility model is further explained in details below based on attached Figures which explain examples.

[0012]

Figure 1 and Figure 2 illustrate one example of pressure sensitive adhesion processed sheet relating to this utility model; and this pressure sensitive adhesion processed sheet is widely used for various displays or decorations, and other various applications; and it is constituted of a surface sheet body (1), a pressure-sensitive adhesive layer (3) having multiple numbers of independent small convex ( ) parts (2) .... which are arranged in a scattered dot manner, and a release paper (5) of which release treated plane side (A) has multiple numbers of independent small concave ( ) parts (4) .... which are arranged in a scattered dot manner and are designed to closely adhere in correspondence with said multiple numbers of small concave ( ) parts (2) ....

[0013]

When this is stated in other words, this utility model's pressure sensitive adhesion processed sheet is formed of a pressure-sensitive adhesive sheet main body (6) comprising a surface sheet body (1) and a pressure-sensitive adhesive layer (3) of which plane of pressure sensitive adhesive layer (3) side is formed

as a pressure-sensitive adhesive plane; and said pressure-sensitive adhesive plane of this pressure-sensitive adhesive sheet main body (6) is covered with a release paper (5).

[0014]

According to this example, small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3) are each formed in a semi-spherical shape, and at the same time, they are arranged in every prescribed gap (in lattice manner) in vertical and horizontal directions.

[0015]

Figure 1 illustrates a view in which only the thickness dimension is enlarged.

[0016]

In addition, it is free to set said pressure-sensitive adhesive sheet main body (6) in any shapes as well as sizes; and it is also favorable when characters, codes, or patterns, or combination of these and coloration applied to the plane that is opposite side to said pressure-sensitive adhesive plane.

[0017]

In addition, as for the materials for surface sheet body (1), papers or plastic films and the like may be used.

[0018]

Furthermore, various types of papers may be used; and for instance, it is preferable when wood free paper showing about  $50 \text{ g/m}^2 \sim 200 \text{ g/m}^2$  basic weight is used.

[0019]

In addition, as for the types of plastic film, for instance, polyester film or vinyl chloride film may be used; and furthermore, other plastic films may be also used. It is also possible to set the thickness dimension in free manner, and it may be preferably set as about  $20 \mu\text{m} \sim 200 \mu\text{m}$ .

[0020]

As for the materials for pressure-sensitive adhesive layer (3), various pressure-sensitive adhesive agents may be used as long as it shows such tack level that can form small convex ( ) parts (2) ....

[0021]

Said small convex ( ) parts (2) ... are made to protrude from a basic flat plane (3a) of the pressure-sensitive adhesive layer (3). In addition, height dimension (H) of small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer should be set within a range of about  $3 \mu\text{m} \sim 50 \mu\text{m}$ , or more preferably  $15 \mu\text{m} \sim 25 \mu\text{m}$ .

[0022]

As for the materials for release paper (5), paper or plastic film may be used; and in the case of paper, release treated plane side (A) should be laminated with a plastic such as polyethylene and the like. In addition, thickness of that lamination should be set as about  $5 \mu\text{m} \sim 100 \mu\text{m}$ , or more preferably, about  $30 \mu\text{m} \sim 50 \mu\text{m}$ .

[0023]

Furthermore, when plastic film is used as said release paper (5), polyester, polypropylene, or polyethylene and the like may be used as such material.

[0024]

In addition, depth dimension of small concave ( ) parts (4) .... of the release paper (5) may be set as identical to the height dimension (H) of small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3) (about  $3 \mu\text{m} \sim 50 \mu\text{m}$ , or more preferably  $15 \mu\text{m} \sim 25 \mu\text{m}$ ).

[0025]

Then, manufacturing method of this pressure sensitive adhesion processed sheet is explained in the order of manufacturing process.

[0026]

First of all, on a release treated plane (A) of the release paper (5), multiple numbers of independent small concave ( ) parts (4) .... are formed through embossing method or printing method and the like.

[0027]

When forming small concave ( ) parts (4) ... through above-explained printing method, small concave ( ) parts (4) .... may be formed by forming raised convex ( ) parts by printing at the portions other than the parts where small concave ( ) parts (4) .... are formed on the release treated plane (A).

[0028]

Then, silicon resin is coated on the plane where small concave ( ) parts (4) ..... are formed to prepare a release treated plane (A).

[0029]

Then, a pressure-sensitive adhesive agent is coated on the release treated plane (A) on which silicon resin is coated. By doing so, part of pressure-sensitive adhesive agent that is coated is packed within small concave ( ) parts (4) .... of the release paper (5).

[0030]

Furthermore, this pressure-sensitive adhesive agent is dried to form a pressure-sensitive adhesive layer (3).

[0031]

The pressure-sensitive adhesive agent within said small concave ( ) parts (4) .... is solidified in almost the identical shape as that of inside of the small concave ( ) parts (4) ..... and becomes independent small convex ( ) parts (2) .....

[0032]

Then, one plane side of the surface sheet body (1) is closely adhered to the plane that is opposite side to the release paper (5) side of the pressure-sensitive adhesive layer (3).

[0033]

By doing so, pressure-sensitive adhesive layer (3) and release paper (5) are mutually and closely adhered to give a pressure-sensitive adhesive sheet main body (6).

[0034]

This utility model's pressure sensitive adhesion processed sheet is manufactured in above-explained manner.

[0035]

The pressure sensitive adhesion processed sheet of this utility model that is manufactured in above-explained manner allows easy peeling and removal of only the release paper (5); and small convex ( ) parts remain protruding from the plane of pressure-sensitive adhesive layer (3) side of the pressure-sensitive adhesive main body (6).

[0036]

Then, when a pressure-sensitive adhesive main body (although this portion is not illustrated in the Figure) onto an other goods lightly, only the top end part of said small convex ( ) parts (2) .... becomes



closely adhered to the surface of other goods; and at the same time, gaps which connect to outside are created at the portions between pressure-sensitive adhesive layer (3) and surface of other goods excluding small convex ( ) parts (2) ....

[0037]

And as it is easy to extract air to outside from said gaps, even when air becomes involved, it is easy to extract this to outside.

[0038]

In addition, when pressure-sensitive adhesive sheet main body (6) is lightly pasted, area of close adhesion of the pressure-sensitive adhesive layer (3) remains small, and even when pasting location is in error, it is possible to re-peel this to repast easily.

[0039]

Furthermore, when prescribed time elapses after pasting, small convex ( ) parts (2) .... of pressure-sensitive adhesive layer (3) show plastic deformation to increase area of close adhesion to generate a firm pressure-sensitive adhesive force.

[0040]

Then, Figure 3 illustrates a first modified example of the small convex ( ) parts (2) .... of the pressure-sensitive adhesive layer (3); and according to this example, each small convex ( ) part (2) .... is designed in a rectangular cone trapezoidal shape.

[0041]

In addition, Figure 4 illustrates a second modified example of small convex ( ) parts (2) ...., and according to this example, each small convex ( ) part (2) ... is formed as a small mound formation (amorphous shape), and at the same time, they are arranged in zigzag manner.

[0042]

Furthermore, it is free to set the shapes of first modification example small convex ( ) parts (2) ... as well as second modification example small convex ( ) parts (2) ... in any shapes such as cone shape, cone trapezoidal shape, or rectangular cone shape and the like.

[0043]

Then, two concrete examples of this utility model's pressure sensitive adhesion processed sheet are explained.

[0044]

First of all, polyethylene was laminated at 30  $\mu\text{m}$  thickness on a wood free paper with 110  $\text{g}/\text{m}^2$  basis weight, and in addition, small concave ( ) parts (4) .... with conical shape were formed through embossing to form a release paper (5). Then, small concave ( ) parts (4) ... were arranged at every 1 mm gap in vertical and horizontal directions, and inner diameter of opening part was set to be 0.3 mm, and furthermore, depth was set to 20  $\mu\text{m}$ .

[0045]

On a laminate plane (release treated plane A) of above-explained release paper (5), silicon resin was coated, and on this plane, pressure-sensitive adhesive agent (BPS-5160 made by Toyo Ink K.K.) was coated and dried at 70  $\text{g}/\text{m}^2$  to form a pressure-sensitive adhesive layer (3).

[0046]

Then, this pressure-sensitive adhesive layer (3) was pasted with a surface sheet body (1) formed of a polyester film to form a pressure sensitive adhesion processed sheet of the first concrete example.

[0047]

A release paper (5) of this pressure sensitive adhesion processed sheet could be easily peeled, and on the plane with exposed pressure-sensitive adhesive layer (3), appearance of independent small convex ( ) parts (2) .... showing 0.3 mm bottom end part outer diameter and 20  $\mu$ m depth at every 1 mm gap in vertical and horizontal directions was noted.

[0048]

Then, pressure-sensitive adhesive sheet main body (6) of this pressure sensitive adhesion processed sheet was pasted manually onto a coated iron panel cut to 50 cm square size; and even when air became involved, it could easily be extracted to cause no so-called "raised form".

[0049]

In addition, once lightly pasted pressure-sensitive adhesive sheet main body (6) could be easily peeled without causing wrinkles. In addition, when it was repasted, it did not inhibit its aesthetic appearance.

[0050]

Then, on a wood free paper with 110 g/m<sup>2</sup> basis weight, gravure printing was applied to form raised bands showing lattice form on a flat plane view.

[0051]

A release paper (5) was formed by using the portions of flat plane view square shapes surrounded with said raised bands as small concave ( ) parts (4) .... In addition, small concave ( ) parts (4) ... were arranged at every 1 mm gap in vertical and horizontal directions, and one side of opening was set to 0.3 mm and depth was set to 20  $\mu$ m.

[0052]

On a printed plane (release treated plane A) of above-explained release paper (5), silicon resin was coated, and on this plane, pressure-sensitive adhesive agent (BPS-5160 made by Toyo Ink K.K.) was coated at 70g/m<sup>2</sup> and was dried to form a pressure-sensitive adhesive layer (3).

[0053]

Then, this pressure-sensitive adhesive layer (3) was pasted with a surface sheet body (1) that is formed of a vinyl chloride film with 70  $\mu$ m thickness to form a pressure sensitive adhesion processed sheet of the second concrete example.

[0054]

A release paper (5) of this pressure sensitive adhesion processed sheet could be easily peeled; and on the plane where pressure-sensitive adhesive layer (3) is exposed, appearance of small convex ( ) parts (2) .... Showing independent plane view of square shaped with 0.3 mm in vertical and horizontal sides and 20  $\mu$ m depth was noted at every 1 mm gap in vertical and horizontal directions.

[0055]

When pressure-sensitive adhesive sheet main body (6) of this pressure sensitive adhesion processed sheet was pasted manually onto a coated iron panel cut to 50 square cm, even when air became involved, it was possible to easily extract this to cause no so-called "raised form".

[0056]

In addition, once lightly pasted pressure-sensitive adhesive sheet main body (6) could be easily peeled without causing wrinkles. When it was repasted, it did not inhibit any of its aesthetic appearance.

[0057]

[EFFECTS OF THE UTILITY MODEL]

This utility model shows following effects due to its constitution explained above:

[0058]

(1) When a plane of small convex ( ) parts (2) .. of the pressure-sensitive adhesive layer side are lightly pasted onto other goods first, (as only the top end parts of said small convex ( ) parts (2) .. are pasted onto the other goods), it is possible to peel this easily. And therefore, even when pasting location is in error, it is possible to peel this again and repast it.

[0059]

(2) Because gaps showing large aeration cross sectional area are formed between pressure-sensitive adhesive layer (3) and other goods (connects to outside), air cannot be pasted in between pressure-sensitive adhesive layer (3) and other goods to cause no so-called "raised form". And therefore, it is possible to conduct a pasting work manually in easy and quick manner.

[0060]

(3) Because gaps showing large aeration cross sectional area (connects to outside) are formed between pressure-sensitive adhesive layer (3) and other goods at a state of completion of pasting, even when gas may generate (over long period of time) between pressure-sensitive adhesive layer (3) and other goods that is pasted on to this, it is possible to spontaneously extract such gas to outside to cause no "raised form".

[BRIEF DESCRIPTION OF THE FIGURES]

[Figure 1]

It illustrates an enlarged cross section of main parts showing one example of this utility model's pressure sensitive adhesive processed sheet.

[Figure 2]

It illustrates a diagonal view showing major parts.

[Figure 3]

It illustrates a diagonal view showing first modification example of small convex ( ) parts.

[Figure 4]

It illustrates a diagonal view showing second modification example of small convex ( ) parts.

[DESCRIPTION OF CODES]

- 1 surface sheet body
- 2 small convex ( ) part
- 3 pressure-sensitive adhesive layer
- 3a basic flat plane
- 4 small concave ( ) part
- 5 release paper
- H height dimension

**Figures 1 through 4**

**Translation requested by: John H. Hornickel, OIPC**  
**Translation by: Mie N. Arntson, 512-331-7167**



【0004】また、上記粘着シート体を、ある種のプラスチック（ポリカーボネート、アクリル）に貼り付けた場合、プラスチックより何等かのガスが発生して「ふくれ」が発生することもあった。

【0005】また、上記粘着シート体を貼り付ける位置を多少なりとも間違えた場合、貼り直しをしなければならないが、一旦貼り付けた粘着シート体は、強固な粘着力を有するため、剥がした場合に粘着シート体が破れたりしわが入ったりして再度貼り付けることが困難であった。

【0006】そこで、本考案は、上述の問題を解決して、いわゆる「ふくれ」が生じることなく、かつ、貼り直しが容易な粘着加工シートを提供することを目的とする。

【0007】

【課題を解決するための手段】 上述の目的を達成するために、本考案に係る粘着加工シートは、表面シート体と、散点状に配置された独立した多数の小凸部を有する粘着層と、この多数の小凸部に対応して密着する散点状に配置された独立した多数の小凹部を有する剥離紙と、から構成し、かつ、上記小凸部は、上記粘着層の基本平坦面から突出し、該小凸部の高さ寸法を、 $3\mu\text{m}\sim 50\mu\text{m}$ の範囲に設定したものである。

【0008】

【作用】 本考案の粘着加工シートから剥離紙を剥がして、粘着面を他の物体にかるく貼り付けた場合、粘着層の多数の小凸部の夫々の先端部が他の物体の表面に密着すると共に、粘着層の基本平坦面が他の物体の表面から離間した状態に保持される。このため、粘着層の基本平坦面と他の物体の表面との間に外部に達する大きな通気断面積の隙間が生じる。そして、この隙間から、空気を外部に容易に抜くことができ、いわゆる「ふくれ」を生じることなく貼り付けることができる。

【0009】また、かるく貼り付けた場合、粘着層の小凸部の先端部のみが他の物体に密着しているため密着面積が小となる。このため、貼り付ける場所を間違えても、再び剥がして貼り直すことが容易にできる。

【0010】また、本粘着加工シートを他の物体に強く押しつければ、不剥に外れなくなる。

【0011】

【実施例】 以下、実施例を示す図面に基づき本考案を詳説する。

【0012】 図1と図2は、本考案に係る粘着加工シートの一実施例を示し、この粘着加工シートは、各種表示や装飾、その他様々な用途に広く使用するものであり、表面シート体1と、該表面シート体1の一面側に形成されると共に散点状に配置された独立した多数の小凸部2…を有する粘着層3と、この多数の小凸部2…に対応して密着する散点状に配置された独立した多数の小凹部4…を剥離処理面A側に有する剥離紙5と、から構成され

ている。

【0013】これを言い換えれば、表面シート体1と粘着層3にて、粘着層3側の面が粘着面とされた粘着シート本体6が形成され、この粘着シート本体6の粘着面を剥離紙5で被覆したものが本考案の粘着加工シートである。

【0014】この実施例では、粘着層3の小凸部2…は、夫々半球状として形成されると共に、縦横に所定間隔毎に（格子状に）配設されている。

10 【0015】なお、図1は、厚さ寸法のみを拡大して示した図である。

【0016】なお、粘着シート本体6は様々な形状及び様々な大きさとするも自由であり、その粘着面とは反対側の面に、文字や記号あるいは模様又はこれ等と色彩を組み合わせたものを描いておくも好ましい。

【0017】なお、表面シート体1の材質としては、紙又はプラスチックフィルム等とする。

20 【0018】そして、紙の種類としては、種々のものが使用可能であり、例えば坪量 $50\text{g}/\text{m}^2\sim 200\text{g}/\text{m}^2$ 程度の上質紙を使用するも好ましい。

【0019】また、プラスチックフィルムの種類としては、例えばポリエステルフィルムや塩化ビニルフィルムが使用でき、さらに、その他のプラスチックフィルムも使用可能である。そして、その厚さ寸法も自由に設定でき、好ましくは $20\mu\text{m}\sim 200\mu\text{m}$ 程度とする。

【0020】粘着層3の材質としては、小凸部2…を形成できる程度の粘性を有するものであれば良く、種々の粘着剤が使用可能である。

30 【0021】小凸部2…は、粘着層3の基本平坦面3aから突出する。また、粘着層3の小凸部2…の高さ寸法Hは、 $3\mu\text{m}\sim 50\mu\text{m}$ 程度の範囲内とし、好ましくは $15\mu\text{m}\sim 25\mu\text{m}$ とする。

【0022】剥離紙5の材質としては、紙又はプラスチックフィルム等とし、紙とした場合は、剥離処理面A側をポリエチレン等のプラスチックにてラミネートする。そして、そのラミネートの厚さは、 $5\mu\text{m}\sim 100\mu\text{m}$ 程度とし、好ましくは $30\mu\text{m}\sim 50\mu\text{m}$ 程度とする。

40 【0023】そして、剥離紙5としてプラスチックフィルムを使用する場合には、その材質としてポリエステル、ポリプロピレン、ポリエチレン等が使用可能である。

【0024】また、剥離紙5の小凹部4…の深さ寸法は、粘着層3の小凸部2…の高さ寸法Hと同一（ $3\mu\text{m}\sim 50\mu\text{m}$ 程度、好ましくは $15\mu\text{m}\sim 25\mu\text{m}$ ）とされる。

【0025】次に、この粘着加工シートの製造方法を製造工程順に説明する。

【0026】まず、剥離紙5の剥離処理面Aに、エンボスや印刷等にて、独立した多数の小凹部4…を形成する。

【0027】上記印刷にて小凹部4…を形成する場合、剥離処理面Aの小凹部4…を形成する箇所以外の部分に印刷によって凸部を形成することにより、小凹部4…を形成するのである。

【0028】そして、小凹部4…を形成した面にシリコン樹脂を塗布して、剥離処理面Aとする。

【0029】次に、シリコン樹脂を塗布した剥離処理面Aに粘着剤を塗布する。すると、塗布した粘着剤の一部は剥離紙5の小凹部4…内に充填される。

【0030】さらに、この粘着剤を乾燥させて粘着層3を形成する。

【0031】こうして、小凹部4…内の粘着剤は、小凹部4…内部の形状と略同一形状に固まって、独立した小凸部2…となる。

【0032】次に、粘着層3の剥離紙5側とは反対の面に表面シート体1の一面側を密着させる。

【0033】これにより、粘着層3と剥離紙5は、相互に強固に密着し、粘着シート本体6となる。

【0034】以上のようにして、本考案の粘着加工シートを製造する。

【0035】このようにして製造される本考案の粘着加工シートは、剥離紙5のみを容易に剥離除去することができ、粘着シート本体6の粘着層3側の面からは小凸部2…が突出する。

【0036】しかして、(図示省略したが)粘着シート本体6を他の物体にかるく貼り付けると、小凸部2…の先端部のみが他の物体の表面に密着すると共に、粘着層3と他の物体の表面との間の小凸部2…を除く部分に外部に連通する隙間が生じる。

【0037】そして、この隙間から、空気が外部に抜けるため、空気を貼り込んでも外部に容易に抜くことができる。

【0038】また、粘着シート本体6をかるく貼り付けた場合、粘着層3の密着面積が小となり、貼り付ける場所を間違えても、再び剥がして貼り直すことが容易にできる。

【0039】さらに、貼り付けて後、所定時間経過すると、粘着層3の小凸部2…が塑性変形して密着面積が増加し、強固な粘着力が発生する。

【0040】次に、図3は、粘着層3の小凸部2…の第1の変形例を示し、この例では、夫々の小凸部2…は四角錐台状とされている。

【0041】また、図4は、小凸部2…の第2の変形例を示し、この例では、夫々の小凸部2…は小笠形(不定形状)とされると共に千鳥状に配設されている。

【0042】なお、第1の変形例の小凸部2…と第2の変形例の小凸部2…を、夫々、円錐形、円錐台形、四角錐形等とするも自由である。

【0043】次に、本考案の粘着加工シートの2つの具体例を示す。

【0044】先ず、坪量 $110\text{ g/m}^2$ の上質紙にポリエチレンを $30\text{ }\mu\text{m}$ 厚さにラミネートし、さらに、円錐形の小凹部4…をエンボスにより形成して剥離紙5を形成した。そして、小凹部4…は縦横に $1\text{ mm}$ 間隔毎に配設し、開口部内径を $0.3\text{ mm}$ とし、かつ、深さを $20\text{ }\mu\text{m}$ に設定した。

【0045】上記剥離紙5のラミネート面(剥離処理面A)に、シリコン樹脂を塗布し、この面に粘着剤(東洋インキ製BPS-5160)を $70\text{ g/m}^2$ 塗布し乾燥して粘着層3を形成した。

【0046】次いで、この粘着層3に厚さ $50\text{ }\mu\text{m}$ のポリエステルフィルムからなる表面シート体1を貼り合わせ、第1の具体例としての粘着加工シートを形成した。

【0047】この粘着加工シートの剥離紙5は容易に剥がすことができ、粘着層3の露出した面上には、下端部外径が $0.3\text{ mm}$ で高さ寸法が $20\text{ }\mu\text{m}$ の独立した小凸部2…が縦横に $1\text{ mm}$ 間隔毎に並んであらわれた。

【0048】そして、この粘着加工シートの粘着シート本体6を、 $50\text{ cm}$ 平方に切断して塗装鉄板に手作業にて貼り付けたところ、空気を貼り込んでも該空気は容易に抜け出し、いわゆる「ふくれ」が生じることはなかった。

【0049】また、一旦かるく貼り付けた粘着シート本体6は、しわを生じることなく容易に剥がすことができた。そして、再度貼り付けても美観を損なうことはなかった。

【0050】次に、坪量 $110\text{ g/m}^2$ の上質紙にグラビア印刷を施して平面視に於て格子状となる突条を形成した。

【0051】この突条に囲まれた平面視正形状の部分の小凹部4…として剥離紙5を形成した。また、小凹部4…は縦横に $1\text{ mm}$ 間隔毎に配設し、開口の一边を $0.3\text{ mm}$ とし、かつ、深さを $20\text{ }\mu\text{m}$ に設定した。

【0052】上記剥離紙5の印刷面(剥離処理面A)に、シリコン樹脂を塗布し、この面に粘着剤(東洋インキ製BPS-5160)を $70\text{ g/m}^2$ 塗布し乾燥して粘着層3を形成した。

【0053】次いで、この粘着層3に厚さ $70\text{ }\mu\text{m}$ の塩化ビニルフィルムからなる表面シート体1を貼り合わせて、第2の具体例としての粘着加工シートを形成した。

【0054】この粘着加工シートの剥離紙5は容易に剥がすことができ、粘着層3の露出した面上には、縦横の辺が $0.3\text{ mm}$ で高さ寸法が $20\text{ }\mu\text{m}$ の独立した平面視正形状の小凸部2…が縦横に $1\text{ mm}$ 間隔毎に並んであらわれた。

【0055】しかして、この粘着加工シートの粘着シート本体6を、 $50\text{ cm}$ 平方に切断して塗装鉄板に手作業にて貼り付けたところ、空気を貼り込んでも該空気は容易に抜け出し、いわゆる「ふくれ」が生じることはなかった。

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【0056】また、一旦かるく貼り付けた粘着シート本体6は、しわを生じることなく容易に剥がすことができた。そして、再度貼り付けても美観を損なうことはなかった。

【0057】

【考案の効果】本考案は、上述の如く構成されるので、次に記載する効果を奏する。

【0058】① 粘着層3の小凸部2…側の面を他の物体に最初にかるく貼り付ければ、(小凸部2…の先端部のみが他の物体に貼り付くため)容易に剥がすことができる。従って、貼り付ける場所を間違えても、再び剥がして貼り直すことが容易となる。

【0059】② 粘着層3と他の物体との間に(外部に連通する)大きな通気断面積の隙間が生じるので、粘着層3と他の物体との間に空気を貼り込むことが全く無く、いわゆる「ふくれ」が生じない。従って、手作業にて容易かつ迅速に貼り付け作業をすることができる。

【0060】③ 貼着完了状態で、粘着層3と他の物体との間に(外部に連通する)大きな通気断面積の隙間を

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形成できるので、粘着層3とそれを貼り付けた他の物体との間に(長期間の間に)ガスが発生した場合でも、そのガスを外部に自然に抜くことができ、「ふくれ」が生じない。

【図面の簡単な説明】

【図1】本考案の粘着加工シートの一実施例を示す拡大要部断面図である。

【図2】要部を説明する斜視図である。

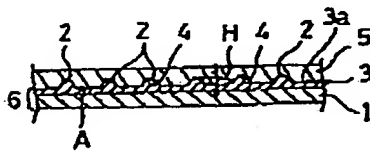
【図3】小凸部の第1の変形例を示す斜視図である。

【図4】小凸部の第2の変形例を示す斜視図である。

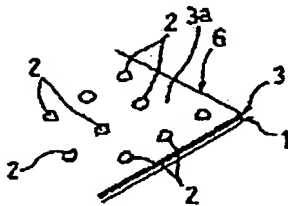
【符号の説明】

- 1 表面シート体
- 2 小凸部
- 3 粘着層
- 3a 基本平坦面
- 4 小凹部
- 5 剥離紙
- H 高さ寸法

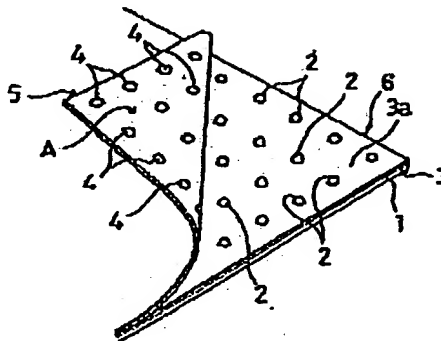
【図1】



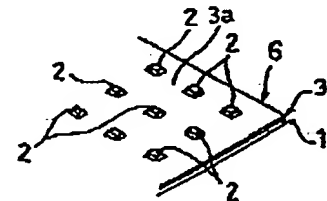
【図4】



【図2】



【図3】



フロントページの続き

- (56)参考文献 特開 昭59-78285 (J P, A)  
 特開 昭60-83829 (J P, A)  
 日本粘着テープ工業会粘着ハンドブック  
 編集委員会編「粘着ハンドブック」日  
 本粘着テープ工業会(昭和60年3月2  
 日)第420頁



宛) ADSD

佐々木部長殿

千坂殿

知財 齋藤

日栄化工／実用新案2503717号の件

出願番号 実願平4-28976号  
登録番号 実用新案2503717号  
公報発行日 平成8年7月3日  
実用新案権者 日栄化工(株)

上記実用新案の包袋を入手しましたので、状況を御連絡致します。本願は、平成8年4月25日（公報発行日：平成8年7月3日）に登録となりましたが、以下の5件の異議申立てがあり、取消し理由通知（刊行物\* に記載された発明である。）が出されその後に実用新案権者（日栄化工(株)）から訂正請求（明細書の訂正（請求項の訂正含む））があり、それが認められて実用新案2503717号は維持が決定しています。従って、現在の権利は訂正後のクレームとなります。

1. 王子化工(株)
2. 橋本堅治（練馬区光が丘）
3. 王子製紙(株)
4. 世良日一（姫路市飾磨区）
5. 高塚ちはる（千葉県流山市）

取消し理由に使用された刊行物\*：特開平3-243677

〈訂正後のクレーム〉

【請求項1】 証跡:アンダーライン

表面シート体1と、散点状に配置された独立した多数の小凸部2...を有する粘着層3と、この多数の小凸部2...に対応して密着する散点状に配置された独立した多数の小凹部4...を有する剥離紙5と、から構成し、かつ、上記小凸部2...は、上記粘着層3の基本平坦面3aから突出し、該小凸部2...の高さ寸法Hを $3\mu\text{m}\sim 50\mu\text{m}$ の範囲に設定し、さらに、粘着完了状態で、上記粘着層3の基本平坦面3aと、被粘着用物体の表面との間に、空気を外部に抜くための外部連通隙間が生ずるように、上記小凸部2...を構成したことを特徴とする粘着加工シート。